

$p4$

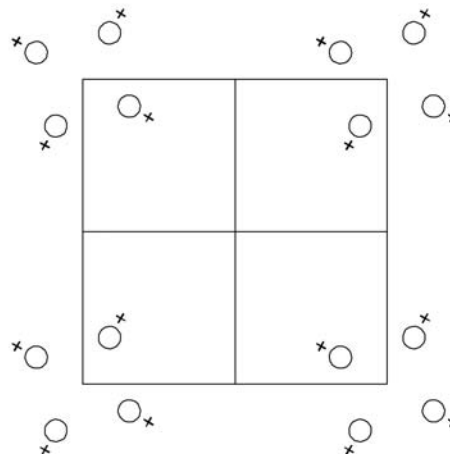
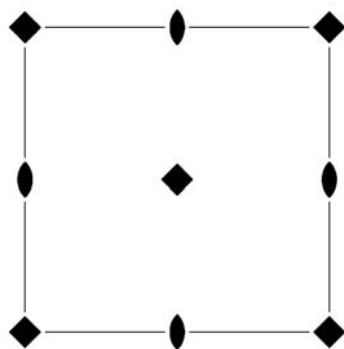
4

Tetragonal/Square

No. 49

$p4$

Patterson symmetry $p4/m$



Origin on 4

Asymmetric unit $0 \leq x \leq \frac{1}{2}; 0 \leq y \leq \frac{1}{2}$

Symmetry operations

- | | | | |
|-----------|-------------------------|--------------------------------------|--------------------------------------|
| (1) 1 | (2) 2 0,0,z | (3) 4 ⁺ 0,0,z | (4) 4 ⁻ 0,0,z |
| (1 0,0,0) | (2 _z 0,0,0) | (4 _z ⁺ 0,0,0) | (4 _z ⁻ 0,0,0) |

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; (2); (3)

Positions

		Coordinates				Reflection conditions
Multiplicity, Wyckoff letter, Site symmetry						General: no conditions Special: $hk: h+k=2n$ no extra conditions no extra conditions
4	<i>d</i> 1	(1) x, y, z	(2) \bar{x}, \bar{y}, z	(3) \bar{y}, x, z	(4) y, \bar{x}, z	
2	<i>c</i> 2..	$0, \frac{1}{2}, z$	$\frac{1}{2}, 0, z$			
1	<i>b</i> 4..	$\frac{1}{2}, \frac{1}{2}, z$				
1	<i>a</i> 4..	$0, 0, z$				

Symmetry of special projections

Along [001] $p4$

$\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$

Origin at $0, 0, z$

Along [100] $\not\neq 1m1$

$\mathbf{a}' = \mathbf{b}$

Origin at $x, 0, 0$

Along [110] $\not\neq 1m1$

$\mathbf{a}' = \frac{1}{2}(-\mathbf{a} + \mathbf{b})$

Origin at $x, x, 0$

Maximal non-isotypic subgroups

I [2] $p211$ ($p112, 3$) 1; 2

IIa none

IIb none

Maximal isotypic subgroups of lowest index

IIc [2] $c4$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$) ($p4, 49$)

Minimal non-isotypic supergroups

I [2] $p4/m$ (51); [2] $p4/n$ (52); [2] $p422$ (53); [2] $p4_2, 2$ (54); [2] $p4mm$ (55); [2] $p4bm$ (56)

II none